

*A
mid.*

36. The method of claim 23, further comprising repeating the steps of claim 23 at predetermined times to determine changes in formation properties over time.

REMARKS

Claims 1 - 26 are pending in the application. Claims 1-26 stand rejected in this Office Action. Claims 27-36 have been added in this response. The added claims are fully supported by the specification. No new matter has been added. The Examiner's rejections are addressed in substantially the same order as in the referenced office action.

Rejection under 35 USC § 103(a)

The examiner has rejected claims 1-26 under 35 USC 103(a) as being unpatentable over Flanders et al. (US Patent 6,009,948) in view of Vogen (US Patent 4,674,591). Applicants respectfully traverse this rejection.

Applicants' invention comprises a vibratory source coupled by a tubular string to a downhole anchor engaged with the borehole. The vibratory source is powered by a surface located power source which can be a hydraulic, electric, or pneumatic system. Load and motion sensors are mounted on the tubular string both downhole and at the surface, and provide signals to a surface control unit for use in feedback control of the vibratory source. Seismic sensors, such as geophones, may be deployed on the surface, in offset wells, or in the same well as the source. The received seismic signals are transmitted back to the control unit and may be used to control the vibratory source so as to maximize the received signals.

With respect to independent claims 1, 12, 18, and 23, the examiner has asserted that *Flanders* teaches the use of a downhole vibratory source connected to an anchor . The examiner asserts that *Vogen* teaches the use of a surface located vibratory source and that it would have been obvious to one skilled in the art to combine the downhole vibratory source driven system of *Flanders* with the surface vibratory source of *Vogen*. Applicants assert that this is clearly an impermissible combination. *Flanders* clearly teaches away from the use of a surface located vibratory source. In the background information (column 2, line 64 to column 3, line 11), *Flanders* cites the exact tool (Baker Hughes Resonance Tool, Product No. 140-52), described in a preferred embodiment of applicants' application, as being undesirable because it is "inefficient because of its great distance from the stuck point and is inexpensive to manufacture." The very nexus of the inventive concept of the downhole vibratory source of the *Flanders* patent would be negated by using a surface source. As such, one skilled in the art would, clearly, have no motivation to combine the surface oscillator of *Vogen* with the downhole oscillator of *Flanders*.

Regarding claim 1, the examiner has cited that *Flanders* comprises '...an anchor within the borehole at a selected location (Fig. 1A, Items 72,70)." The *Flanders* patent describes anchoring the resonance tool to the object to be fished or retrieved (col. 5, lines14-16). There is no teaching or suggestion of "an anchor device engaged with the borehole" as claimed by applicants.

Regarding claim 12, the argument regarding the anchor device of claim 1 applies here as well (Note that the examiner has referred to item 68 as an anchor. Item 68 is a plurality of sensors and applicants have assumed that the examiner meant items 72, 70). In addition, the

examiner has cited "... a sensor spaced apart from the anchor (Figure 1A, item 60)." The sensor 68, of *Flanders*, determines the response of the object or drill pipe to the pulses of mechanical energy generated by the resonator or for determining various downhole operating parameters (col. 6, lines 42-52 and 59-63). There is no teaching or suggestion, in *Flanders*, of "at least one detector placed spaced-apart from the anchor to detect seismic signals responsive to the seismic energy imparted in the formation by the anchor as claimed by applicants.

Independent claims 18 and 23 are method claims incorporating the limitations of independent apparatus claims 1 and 12 respectively and the arguments made regarding claims 1 and 12 apply to claims 18 and 23 respectively.

For the reasons stated above, applicants assert that independent claims 1, 12, 18, 23 and their corresponding dependent claims are patentable over *Flanders* in view of *Vogen* and the prior art of record.

Revisions showing changes

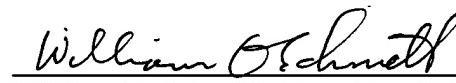
Added claims

27. The system of claim 12, wherein the anchor device is a slip anvil, said slip anvil adapted to act cooperatively with a driver coupled to the vibratory source to generate a broadband seismic signal in the formation when said driver impacts said slip anvil.
28. The system of claim 12, wherein the seismic energy is one of (i) a single frequency and (ii) a swept frequency.
29. The system of claim 12, wherein the seismic energy is a broadband signal.
30. The method of claim 23, wherein the step of energizing the vibratory source to impart seismic energy through the anchor to the formation includes energizing the vibratory source causing a driver coupled to the vibratory source to impact the anchor, the anchor comprising a slip anvil, and imparting a broad band signal through the anchor to the formation.
31. The method of claim 23, wherein the seismic energy is one of (i) a single frequency and (ii) a swept frequency.
32. The method of claim 23, wherein the seismic energy is a broadband signal.

33. The system of claim 12, wherein the at least one detector is a geophone.
34. The method of claim 23, wherein the at least one detector is a geophone.
35. The system of claim 12, wherein the at least one anchor includes a plurality of fixed anchors located at a corresponding plurality of predetermined locations.
36. The method of claim 23, further comprising repeating the steps of claim 23 at predetermined times to determine changes in formation properties over time.

Consideration of the application as amended is respectfully requested. The Commissioner is hereby authorized to charge any fee and credit any overpayment associated with this response to Deposit Account No. 02-0429(284-15718-US).

Respectfully submitted,


William E. Schmidt
William E. Schmidt, Reg. No. 47,064
Madan, Mossman & Sriram, P.C.
2603 Augusta Suite 700
Houston, Texas 77057-5638
Tel: (713) 266-1130 x 120
Fax: (713) 266-8510
Attorney For Applicants

Dated: February 5, 2003